

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 60063.12WOU3	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US03/26801	International filing date ( <i>day/month/year</i> ) 27 August 2003 (27.08.2003)	(Earliest) Priority Date ( <i>day/month/year</i> ) 27 August 2002 (27.08.2002)
Applicant VANDERBILT UNIVERSITY		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the Report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 2A1



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

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International application No.

PCT/US03/26801

## Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

### NEW ABSTRACT

A bioreactor (1100) for cultivating living cells in a liquid medium. (See Figure 2A1) In one embodiment of the present invention, the bioreactor (1100) includes a first substrate (1124) having a first surface (1124a), an opposite second surface (1124b) and edges. The bioreactor (1100) further includes a second substrate (1121) having a first surface (1121a) and an opposite second surface (1121b), defining a cavity (1121c) with a bottom surface (1121d), where the bottom surface (1121d) is located therebetween the first surface (1121a) and the second surface (1121b). The first surface (1121a) of the first substrate (1124) is received by the second surface (1121b) of the second substrate (1121) to cover the cavity (1121c) so as to form a channel (1101) for receiving cells and a liquid medium. In forming the bioreactor, the channel (1101) is sized to allow the growth of a layer of cells on a biocompatible coating layer and a flow of liquid in the channel (1101). The flow of liquid is controlled so as to provide a known shear force to the layer of cells. The flow of liquid can be further controlled so as to provide an environment that simulates a vascular space in the channel (1101).

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**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : C 12 M 1/00

US CL : 435/289.1

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/289.1, 287.1, 287.2, 287.3, 287.9, 288.5, 288.6, 288.7, 283.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,489,515 A (HATSCHEK ET AL.) 6 February 1996 (06.02.1996), col. 2, lines 54-59, col. 7, lines 23-41, col. 8, lines 23-29, col. 11, lines 12-56, and Figure 1.	1-41 and 50-57
X	US 4,988,623 A (SCHWARZ ET AL.) 29 January 1991 (29.01.1991), col. 6, lines 66-68, col. 7, lines 31-68, col. 8, lines 58-64, col. 10, lines 12-43.	42-49

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

10 December 2003 (10.12.2003)

Date of mailing of the international search report

17 AUG 2004

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